Mr. Laufer has very kindly sent to me, but none considers that the ware itself can be called porcelainic.

Laufer also has a section entitled "Historical Notes on Kaolin," and he shows that no real conclusion as to the origin of Chinese porcelain can be drawn from a consideration of the history of kaolin. It might be added that similar remarks apply to the manufacture of porcelain in Europe, for, contrary to the general belief, it can be proved that the required white-burning clay was a well-known article of commerce in Europe long before the method of making porcelain was developed by Böttger early in the eighteenth century. The Chinese appear to have adopted glazing near the beginning of the Christian era, and Laufer accepts Hobson's conclusion that the idea of glazing pottery was derived directly from the West, by contact with the Hellenistic world, in comparatively late historical times. Although a knowledge of glazing was necessary before the Chinese could manufacture porcelain ware, yet in this achievement "the creative genius of the Chinese was not guided by outside influences, but relied on its own powerful resources."

J. W. MELLOR.

NOTES.

AN exhibition of medical war specimens will be opened in the museum of the Royal College of Surgeons of England, Lincoln's Inn Fields, by Sir Alfred Keogh, G.C.B., Director-General of the Army Medical Service, on Thursday, October 11, at 3 p.m. The greater part of the exhibition is devoted to specimens collected by officers of the R.A.M.C. during the present war, but there are also representations of the wounds and injuries of former wars, borrowed from the museums of the College of Surgeons, of the Army Medical College, Millbank, of St. Thomas's Hospital, and of University College Hospital. The specimens have been prepared and arranged by the members of the museum staff of the college. At the same time, the honorary fellowship of the college is to be presented to Sir Alfred Keogh.

A NATIONAL institute is to be established in Italy having for its objects the investigation of the relations between malaria and agriculture, the study of the direct and indirect causes of the unhealthiness of malarial districts, and the organisation of a campaign against those causes.

WE note from *Engineering* for September 28 that the operation of lifting into place the central span of the new Quebec Bridge was completed successfully on Thursday last, September 27. The work was commenced on Tuesday, and extended over three days. The weight of the span is about 5000 tons, and the height of lift 150 ft.

THE council of the Chemical Society announces that three lectures are to be given at the ordinary scientific meetings during the forthcoming session as follows:—December 6, "The Relation between Chemical Constitution and Physiological Action," Dr. F. L. Pyman; February 21, 1918, "Recent Studies on Active Nitrogen," Prof. the Hon. R. J. Strutt; April 18, the Hugo Müller lecture, entitled "The Old and the New Mineralogy," Sir Henry A. Miers. It is also hoped to announce at a later date that Dr. Horace T. Brown will deliver the lecture entitled "The Principles of Diffusion: their Analogies and Applications," which was unavoidably postponed last session. Arrangements have also been made for informal meetings to be held on November 15, March 21, and May 16.

WE learn from the *Secretary,* the journal of the Chartered Institute of Secretaries, that a *questionnaire* was recently circulated among members of the institute in order to obtain opinions as to the desirability of adopting a decimal system in place of the present British coinage, and the substitution of the metric system for the existing United Kingdom weights and measures. Of those who replied, 85 per cent. favoured a change to a decimal system of coinage as likely to be beneficial to the business in which they were engaged; and of the replies which expressed a preference, 66 per cent. favoured a £ basis of coinage rather than an "Imperial crown" or dollar basis. To an inquiry as to whether overseas business was hindered by the use of the present British coinage 50 per cent. of the replies indicated that this business was not so hindered; while in 64 per cent. of the replies a decimal system has been found of service for internal purposes in the business. In the case of weights and measures, 86 per cent. of the replies favoured a change to the metric system, and 53 per cent. of these had already adopted the change. Improved and extended business relations with traders in other countries were reported in 75 per cent. of the replies favouring the change. In 61 per cent. the business is stated to be hindered by the use of British weights and measures.

THE jubilee of the Albert Institute of Literature, Science, and Art, Dundee, was commemorated on September 20. It took its origin from the desire to perpetuate the memory of the Prince Consort by erecting a building devoted to the furtherance of the subjects which had occupied so much of his attention. The movement began in 1863, and the Town Council, when giving ground for the building, stipulated that accommodation should be provided within the structure for a free public library, in the event of Dundee adopting the Library Act. The Albert Institute was designed by Sir G. Gilbert Scott, and was opened in September, 1867, when the British Association occupied the Albert Hall in the building, and the public library was begun. An additional building was erected in 1872 as a museum and picture gallery, and ultimately the whole structure was handed over to the community. The story of this institute is one of continual progress. Large additions were made to the museum in 1887, and a separate technological museum was established in 1900. The libraries now consist of central lending and reference libraries, six branch libraries, partly paid for during the past ten years by Mr. Andrew Carnegie, two museums, two sculpture galleries, and six picture galleries. The donations to these departments in buildings, books, specimens, and pictures amount to more than 160,000*l*., given by citizens and by Mr. Carnegie. At present the libraries contain 170,000 volumes, and the annual issue is about 420,000 volumes. The museums have departments for natural history, ethnography, geology, and technology. The picture galleries contain representative works by eminent modern artists. At the commemoration addresses were delivered by Principal Sir John Herkless, Dr. Hew Morrison, Bailie Martin, Dr. John Ross, Mr. R. F. Martin, and others.

MR. RUFUS D. PULLAR, head of the well-known firm of Messrs. J. Pullar and Sons, Perth, whose death in Edinburgh on September 22 we recorded last week, was born in Perth in 1861, and was the elder son of Sir Robert Pullar. The firm was founded in 1820, and afterwards became one of the largest dyeworks in Great Britain, having a floorage area of more than 100,000 square yards, and being equipped for cleaning, dyeing, and finishing every kind of textile material. As a young man Mr. Pullar studied chemistry at Edinburgh University and the Yorkshire College at Leeds, and he visited the most important dyeworks in France, Germany, Switzerland, and the United States. Since the outbreak of war he spared neither time nor labour in the national cause, and was prominently associated from the beginning with Government action concerning the development of British chemical industries, particularly the colour industry. Mr. Pullar was connected with nearly all the philanthropic and educational movements in his native county. He was a fellow of the Chemical Society, a member of the Society of Chemical Industry, and for the two years 1915–16 was president of the Society of Dyers and Colourists, and chairman of the Dyewares Supply Committee formed by that society in October, 1914. In December, 1914, he was appointed a member of the Board of Trade Advisory Committee, which was entrusted with the difficult task of drafting a scheme to ensure the manufacture of dyes in this country on an adequate scale. This ultimately led to the formation of British Dyes, Ltd. He was also a member of the Provisional Committee of the Association of British Chemical Manufacturers. His membership of the Perthshire Appeal Tribunal and his duties as a Commissioner under the National Service scheme also made a heavy draft on his energies, and his many public activities, coupled with some recent labour difficulties, led to a breakdown in his health.

BY the death of Philippe de Vilmorin on June 30, at the early age of forty-five, a notable and brilliant figure has been removed from the horticultural world, one that science can ill afford to lose. Inheritor of a great name, and head of a great firm with unrivalled resources, de Vilmorin placed both freely at the service of the science to the interests of which he was devoted. The precision in methods of plant-breeding which Mendel's discovery introduced at once appealed to him. He started experimental work in these directions, and some of his results with wheat and peas have already been published and are well known to geneticists. But while deeply interested in the purely scientific side of genetic studies, de Vilmorin was fully alive to their immense practical importance, and gave every encouragement to his staff at Verrières-le-Buisson to work along these lines. The achievements of Louis and Henri de Vilmorin, his father and his grandfather, had made him realise that the continued prosperity of a great and progressive firm must depend eventually upon the attitude adopted towards scientific discovery. He was actuated by an earnest desire to bring the so-called practical and the scientific workers into closer contact with one another, and spared neither time nor means to effect his object. A great opportunity came to him when the fourth International Congress on Genetics met at Paris in 1911, and de Vilmorin availed himself of it to the utmost. He undertook the arduous work of secretary, in which position his influence and prestige were exerted to bring together for their mutual profit a representative gathering from horticultural and biological circles. His great personal charm played no small part in making the congress the great success that it undoubtedly was. He undertook the further task of collecting and editing the contributions made to the congress, and the beautiful and valuable volume of reports issued owes as much to his enthusiasm as to his generosity. De Vilmorin also assisted in the progress of horticulture in other directions. He published papers on the beet-sugar industry of the United States, on the culture of ginseng in Korea and Manchuria, and on the tobaccos of commerce. He was also responsible for three important publications of his firm—"Les Fleurs de Pleine Terre," "Le Manuel de Floriculture," and the "Hortus Vilmorinianus." The first two are standard works on flower gardening, while the last is a valuable report on the behaviour of rare and little-known plants tested by the firm. Philippe de Vilmorin filled a unique place in the scientific world. No man was better endowed for helping to bridge over the gulf that long existed between the horticulturist and the botanist, between the garden and the laboratory. He played a great part in such success as has already been achieved. He would have played a greater part had his life been spared.

THE question of the religious or magical significance underlying the customs of bull-baiting or cattle-driving has been discussed without much result. Mr. W. Crooke, in *Folk-Lore* (vol. xxviii., No. 2), has collected a number of instances from India and elsewhere in which, at the critical seasons of agriculture, particularly at the sowing and transplanting of rice, the plough cattle are driven from their stalls and exposed to considerable violence. This may be conjectured to be a method of arousing their vitality and that of the crops. The late Major Tremearne believed that the form of bull-baiting practised in Nigeria was probably a fertility rite. The question is still obscure, and much more material must be collected before any definite conclusion can be reached.

IN the September issue of *Man* the Rev. A. T. Bryant describes the Zulu cult of the dead. Their religion makes no definite statement on the doctrine of the immortality of the soul. The soul is generally believed to survive death, and sacrifice is offered to it practically continuously for an indefinite period of time; but how long it will continue to live, and whether or not it will endure for ever, are not defined. A man dies, but only in his flesh; his spirit still endures; if it does not go to the bosom of Nkulunkulu, the Creator, it goes where he is supposed to be, to the nearest veldt. There it becomes changed, and in due course reappears in visible form in the guise of a snake—not a previously existing snake, but it simply materialises into one. To kill one of these spirit snakes was in former times a serious offence, and tests are prescribed by which such snakes can readily be identified, one distinction from other varieties being that they are all harmless.

PROF. FUTAKI discusses the cause of typhus fever in *The New East* for August (vol. i., No. 3). He and his co-workers claim to have demonstrated the presence of a delicate spiral micro-organism or spirochæte in this disease. It measures 6–8 microns in length, and is mostly found in the kidneys and suprarenal capsules. Monkeys can be infected by injection of the blood of a patient at an early stage of the disease, and similar spirochætes are present in the monkey's kidney.

IN *Science* for August 17 (vol. xlvi., No. 1181) Mr. N. A. Cobb contributes a general article on *intra-vitam* staining of tissues. For the examination of such objects perfectly corrected lenses must be employed, and Mr. Cobb recommends the use of one apochromatic objective (2 mm.) as a condenser for another apochromatic objective. This necessitates mounting the object to be examined between two thin cover-glasses, which may be supported upon a special carrier. By this arrangement the condenser objective may be brought into proper focus.

IN a circular issued by the Local Government Board attention is directed to the probability of the occurrence of indigenous cases of malaria in England.

This is rendered possible by the return to England of numbers of men who have had malaria in the Eastern campaigns. These men in many instances still carry the parasites in their blood, and, given the presence of the intermediary anopheline mosquitoes, considerable risk of the transmission of the disease must exist. In fact, cases of indigenous malaria arising in this way have recently been recorded. The Board invites the co-operation of medical practitioners and medical officers of health, and has made arrangements whereby specimens of blood may be examined. Inquiries are also being instituted into the local prevalence of anopheline mosquitoes.

A very useful pamphlet on bee plants and their honey has been drawn up by Mr. Grieve, of Whin's Vegetable Drug Plant Farm and Medicinal Herb Nursery, Chalfont St. Peter, Bucks. The various useful bee plants are referred to in special paragraphs, and notes of value as to the plants themselves and the character of their honey are given. The time of year at which the plants are in flower is also mentioned. Some attention is paid to poisonous honey, and the classic case of the rhododendron and azalea honey near Trebizond referred to by Xenophon is quoted. The uses of honey, its quality, and also the treatment of bee stings are given their due share of attention, and the pamphlet should prove of value to all interested in the beekeeping industry.

We have received Bulletin No. 10 of the Department of Fisheries of the United Province of Bengal and Bihar and Orissa. It is a statement of the quantities of fish imported into Calcutta in the year ending March 31 last. The promptitude in publication is to be remarked, but this is explained by the circumstance that the data are evidently copies of "traffic returns," being statements of the quantities of fish carried by the various railways and other means of conveyance. No mention of the kinds of fish, or of their value, is given.

A description of the Gymnosomatous Pteropods of the coastal waters off Ireland is given by Miss Anne L. Massy in the July number of the Proceedings of the Royal Dublin Society. The report is interesting because of our meagre knowledge of the group as it exists in British and Irish seas. The collections were made, by plankton and other nets, by the Irish fishery cruiser *Helga* off the west, south, and east coasts of Ireland during the years 1901–4. The Pteropods are not an abundant group among the specimens taken by the *Helga*, and they occur mostly in deep water between latitudes 50° to 52° N. and longitudes 11° to 13° W. Miss Massy has identified twelve species, and six of these are new to science, while four others are now recorded, for the first time, from British or Irish seas. Most of the species are deep-water forms, but one, *Pneumodermopsis paucidens* (Boas), is a shallow-water animal, and is fairly common between Inishbofin (in County Galway) and St. George's Channel, and is abundant enough to be of some value as a source of food for fishes.

We have received from Dr. C. C. Easterbrook the interesting reports of the Crichton Royal Institution, Dumfries, for 1913 and 1914, as bearing upon the review by Sir Robert Armstrong-Jones of "Shell-shock" in Nature of September 6, and entitled "The Psychopathy of the Barbed Wire." In specially marked paragraphs these reports emphasise (*a*) the definite dependence of the mind upon the body, "for mental illness, like other illnesses, is primarily a matter of derangement of health"; further, "in mental affections the mental machinery (*i.e.* the cells of the cerebral cortex) is disordered in its working and thrown out of gear"; (*b*) the concern expressed by all psychiatrists long before the war that mental disease among the poor should receive statutory sanction for treatment without the medical certificate, which, when issued, registers insanity as well as pauperism. As stated by Sir Robert, these suggestions made by the authors of "Shell-shock, etc.," are plainly the reflection of the considered opinion of all those who practise among the mentally afflicted. They have for many years urged the early treatment of these cases, both in the interests of the patient, who recovers earlier, and upon grounds of public economy. Lastly, (*c*) the reports show the dependence of mental illness upon the nervous or neurotic constitution, which "is a precursor of and a *sine qua non* of an attack of insanity." The reports support the view that the nervous constitution "is to be found among the nearer blood-relations." Although Dr. Easterbrook criticises the inferential value of hereditary histories of nervous and mental diseases, he yet derives "anomalous dispositions" in great part from racial, ancestral, and familial traits, with the result that the sufferer "loses his nerves" in consequence of a faulty heredity.

Red sandal (*Pterocarpus santalinus*, Linn., f.) was formerly valued for the red colouring matter santalin found in the heart-wood, and was exported to Europe from Madras in large quantities for use as a dye. This use outside India has been superseded by aniline dyes, and the wood is now used for the construction of house-posts, as it is never attacked by white ants. The tree grows on the slopes of the Cuddapah and neighbouring hills in the Madras Presidency, and a useful account of the tree and its growth, etc., with a map of its distribution and photographs, is given by Mr. T. A. Whitehead in Forest Bulletin No. 34, India. "Redwood" was frequently used as ballast in home-going ships in early days, and was referred to as "Caliature," a name which Rumphius traces to the town of Kistnapatam, eighty-two miles north of Madras, which, according to an old glossary, is the Greek Sopatma, or otherwise "Calitore." In a Portuguese map of 1672 a village Caletur is indicated, and it is interesting that, though the place was known to foreigners as Calitore or Caletur, it was not recognised by that name by British factors.

Towards the middle of June in the present year considerable tracts of the Pennine Hill pastures were found to be infested with the caterpillar of the antler moth (*Charaeas graminis*, L.) in extraordinary numbers, causing serious damage to the grazing. The outbreak was investigated at the time by officers of the Board of Agriculture and others, and forms the subject of two reports which are published in the August issue of the Board's *Journal*. Messrs. A. C. Cole and A. D. Imms contribute a report on observations in the Peak District. They record that the principal grass attacked was that known locally as "bent" grass (*Nardus stricta*), whilst cotton grass (Eriophorum) and other species appeared to suffer less severely. The more succulent and finer grasses escaped attack, as did also bilberry, white bedstraw, heather, and bracken. The altitude appeared to be a distinct factor in the limitation of the infestation, no caterpillar being found at an elevation less than 900 ft., although from that altitude up to 1700 ft. it was prevalent. The two most efficient barriers were found to be water and stone walls. These observations are substantially confirmed by Mr. J. Snell's report on the outbreak in Yorkshire. He also found *Nardus stricta* to be badly attacked, and further observed the caterpillar feeding on *Aira* *caespitosa,* some of the finer grasses, and other plants. Messrs. Cole and Imms offer suggestions as to possible causes of the outbreak, and both reports agree in recommending the cutting of trenches across the grassland as a preventive measure. The effectiveness of spraying measures is also discussed.

THE cutting off of supplies of potassium salts from the German deposits has forcibly directed attention to other sources hitherto neglected. Of the many waste products investigated few appear to offer better prospects of economic utilisation than the flue-dust of blast-furnaces. That soluble potassium salts are present in these flue-dusts is no new discovery, but only of late have they received serious consideration. According to tests by Mr. H. T. Cranfield, published in the August issue of the *Journal of the Board of Agriculture,* the potash-content of these flue-dusts is extremely variable, the total (acid-soluble) potash ranging in the twelve samples quoted from 2·97 to 15·89 per cent. K_2O, whilst the water-soluble potash ranged from 1·23 to 9·25 per cent. The flue-dusts vary greatly in colour, and, generally speaking, the lighter-coloured materials are richest in potassium salts. Potassium sulphate is the principal of these salts, the chloride being also present in smaller proportion. It is suggested that the total annual output of potash in these flue-dusts is probably not fewer than 15,000 tons, of which quite one-half is soluble in water. These data furnish adequate justification for the Order recently issued by the Ministry of Munitions whereby the sale and treatment of blast-furnace dust are brought under control.

IN continuation of the experiments on the temperature-gradient in the lavas of Kilauea, referred to in NATURE of June 28 (vol. xcix., p. 352), Mr. T. A. Jaggar, jun., records that bright lines in the lava-lake give temperatures of about 1020°—that is, about 250° above those of the lake magma 3 ft. below the surface (Bull. Hawaiian Volcano Observatory, March, 1917, p. 34). The same author contributes an article on "The Thermal Gradient at Kilauea" to the Journal of the Washington Academy of Sciences, vol. vii., p. 397, in which he further emphasises the generation of heat at the surface "through completion of the reaction between rising unstable gas mixtures and through union with atmospheric oxygen." The liquid lava in the lake is 14 metres deep, and rests on a seemingly pasty bottom. The lower 5 metres of the lake have a temperature of 1120° to 1170°; this is attributed to the release of air from foundered blocks, which reacts with the volcanic gases and produces reheating.

THE mean monthly temperatures of the surface waters of the Atlantic Ocean north of lat. 50° N. are the subject of a paper by Dr. C. Ryder which appears as one of the publications of the Danish Meteorological Institute. In 1892 the institute published the isotherms for six months of the year calculated from fourteen years' observations. The present paper marks a great advance, for it comprises all months of the year, is based on forty years' observations, and extends to lat. 50° S. Most of the observations are from Danish vessels, and unfortunately data are lacking for the sea a few degrees east of Iceland in most months. A chart is given for each month of the year, based on the mean temperatures calculated for stations of 1° squares. The information is also tabulated in mean values for the four decades of the period covered. This arrangement was desirable for many reasons, not least because the transition from steam to sail resulted in certain areas being more frequented in some decades than in others. Perhaps the most instructive chart is that on which the isotherm of 9° C. has been drawn for all months of the year. The January, February, and March isotherms almost coincide. In April the northern trend is marked in the east, and in succeeding months the isotherm swings north until it touches the north-west and south-east coasts of Iceland in August. Then again it withdraws southward. In the west there is far less divergence between the relative monthly positions of the isotherm, for the cold southward current is maintained throughout the year.

THE problem of temperature measurement and the pyrometric control of furnace-casting and ingot-teeming temperatures in steel manufacture is one the importance of which it would be difficult to overrate. Hitherto on account of its supposed difficulty its solution has not been attempted. Publication No. 91 of the Technologic Papers of the Bureau of Standards is therefore to be welcomed in that it takes up this problem, and the conclusion reached by Dr. Burgess, the author, is that it does not really present serious difficulties or uncertainties. Observations have been taken in several steel plants. The most satisfactory instrument to use is an optical pyrometer using monochromatic light, and permitting observation from a distance of streams of metal. It is shown that the necessary corrections to the observed readings for emissivity of metals and oxides to give true temperatures are sufficiently well known, but there may be uncertainty in the case of liquid slags. For streams of liquid iron or steel the most probable value of emissivity to take, with a pyrometer using red light of wave-length $\lambda=0{\cdot}65\ \mu$, is $e=0{\cdot}40$, corresponding to a correction of 139° for an observed temperature of 1500° C. The value of e for liquid slags is usually about 0·65, but varies with the composition of the slag. It appears from the author's results that the temperatures of the roof of an open-hearth furnace bear no necessary relation to that of the metal bath which again it is shown may have zones of considerable differences in temperature, depending upon the operation of the furnace. The temperature of the roof of an open-hearth furnace, depending upon the firing practice, may vary very rapidly, and within wide limits, from 1550°–1750° C. That of the bath is usually kept between 1600° and 1670° C. There appears to be a remarkable degree of uniformity in casting temperatures actually acquired by the melters in practice. Thus for nineteen consecutive Bessemer heats the teeming temperatures of the ingots were all between 1500° and 1555° C., and a similar degree of concordance was found in the open-hearth practice of several mills.

IN view of the importance of Fourier's series in physical applications, much interest attaches to a paper by Prof. H. S. Carslaw on "A Trigonometrical Sum and the Gibbs Phenomenon in Fourier's Series" (*American Journal of Mathematics,* vol. xxxix., No. 2, 1917). In this paper Prof. Carslaw gives a proof of the property first noticed by Gibbs, namely, that when a function becomes discontinuous the sum to infinity of its Fourier expansion does not always merely change at an infinitely steep gradient from the initial to the final value of the function, but that in certain cases it may, in the neighbourhood of the discontinuity, fluctuate between a maximum and a minimum value *outside* the limits of value of the function itself. In other words, the maximum and minimum values of the sum of a finite number of terms of the expansion, just before and after the discontinuity, may be outside the limits of value of the function itself, the maximum exceeding the larger value of the function, and the minimum being less than the smaller value by amounts which remain finite, even if the number of terms be increased indefinitely. The proof is well illustrated by the diagrams at the end of Prof. Carslaw's paper, notwithstanding the fact that similar diagrams for the expansion considered in the paper have frequently occurred in text-books.

The business of the *Electrician* Printing and Publishing Co., Ltd., having been acquired by Messrs. Benn Bros., Ltd., 8 Bouverie Street, E.C.4, the forthcoming books of the former company, announced in Nature of September 20, will be published by Messrs. Benn.

OUR ASTRONOMICAL COLUMN.

September Meteors.—Mr. Denning writes that a fair number of meteors, including several brilliant fireballs, were observed in September. There was a well-defined shower, not far from the Pole, at 314° + 79° at the middle of the month, and at the period from September 19–24 the chief radiant points were at 4° + 27°, 59° + 35°, 271° + 22°, 290° + 52°, 343° + 14°, and 352° + 2°. A very brilliant meteor was observed on September 21 at 10h. 3m., from the radiant in Cygnus. As seen from Bristol it was brighter than Venus, and fell from a height of 67 to 28 miles. On September 23, at 7h. 42m., a fireball illuminated the sky as seen from Clevedon, and it had a long, slow, and nearly horizontal flight from a radiant at 322° − 23° in Capricornus. Its path was about 166 miles from over the English Channel to Welshpool, and it descended from 64 to 32 miles. Though it had a very extended path, only two observations of it were received, viz. from Clevedon (Somerset) and Fowey (Cornwall), but the sky was cloudy at many places.

Comet 1916*b* (Wolf).—The following is a continuation of the ephemeris, for Greenwich midnight, given by Messrs. Crawford and Alter in Lick Observatory Bulletin No. 295:—

1917	R.A.			Decl.			Log Δ	Brightness
	h.	m.	s.	°	′	″		
Oct. 4	23	38	17	−1	8	2	0·0891	1·22
6		38	22	1	45	27	0·0972	
8		38	31	2	21	9	0·1055	1·10
10		38	43	2	55	5	0·1141	
12		38	58	3	27	14	0·1227	0·99
14		39	18	3	57	37	0·1315	
16		39	41	4	26	13	0·1404	0·89
18		40	7	4	53	3	0·1495	
20		40	38	5	18	9	0·1586	0·79
22		41	13	5	41	33	0·1678	
24		41	51	6	3	16	0·1770	0·71
26		42	34	6	23	21	0·1863	
28		43	20	6	41	51	0·1956	0·63
30		44	10	6	58	49	0·2049	
Nov. 1		45	3	7	14	17	0·2142	0·56
3	23	46	0	−7	28	20	0·2235	

The comet is situated below the Square of Pegasus, and is well placed for observation. It is, however, much fainter than might have been expected from the fact that it was discovered more than a year before perihelion passage. Between August 13 and August 22, according to observations by Quénisset, the magnitude of the comet fell from 8 to 9.

A Colour Scale for Stars.—An attempt to establish a scale of colours adapted to observations of stars and planets has been made by Prof. W. H. Pickering (*Popular Astronomy*, vol. xxv., p. 419). The numerical values assigned to the different colours are:—5, deep-blue; 6, sky-blue; 7, light-blue; 8 pale-blue; 9, bluish-white; 10, white; 11, yellow; 12, orange; 13, reddish-orange; 14, orange-red; 15, light-red; 16, deep-red. The typical colours are shown in circular patches on a coloured plate, which is to be viewed by one eye under carefully adjusted illumination, while the planet, or star out of focus, is viewed with the other eye at the telescope. To secure constant conditions of comparison, the illuminating source is to be slightly modified as required, so that certain standard stars of type K always register 11. The average results for stars of different types are compared with the colour indices (differences between photographic and visual magnitudes) in the following table:—

Type	Colour scale	Colour index
Oe	7·0	—
B	6·7	−0·3
A	7·4	0·0
F	7·6	+0·3
G	9·5	+0·7
K	11·5	+1·2
M	12·0	+1·6
N	13·7	+2·5

An extensive investigation of star colours has also been made by H. E. Lau (*Astronomische Nachrichten*, No. 4900). The scale in this case is white = 0, yellow = 5, and red = 10. The influence of atmospheric absorption and the effect of magnitude have been examined, and a catalogue showing the colours of more than 700 of the brighter stars is given.

AN AUSTRALIAN CHEMICAL INSTITUTE.

An Australian Chemical Institute has been formed with its headquarters in Sydney, and branches in every State of the Commonwealth. The provincial committees include the professors and other teachers of chemistry in the universities and most of the professional chemists in the several States. The institute has been framed on much the same lines as the Institute of Chemistry for Great Britain and Ireland. The objects set forth are:—(1) To raise the status and advance the interests of the profession of chemistry; (2) to promote the usefulness and efficiency of persons practising the same; (3) to afford facilities for the better education and examination of persons desirous of qualifying as technical analysts and chemical advisers; (4) to obtain power to grant legally recognised certificates of competency. Persons eligible for membership must possess certain qualifications, such as the degree of a recognised British university where they have studied chemistry for not fewer than three years, or an approved diploma in some branch of chemistry granted by an approved technical college or school of mines (no mention is made of the length of study required from such), or be fellows or associates of the Institute of Chemistry of Great Britain and Ireland, or who have satisfied examiners appointed by the council that they have attained a necessary standard of chemical education; other persons may be admitted by the council without examination for special reasons on the recommendation of the committee of a branch.

The council does not intend to hold any examination for admission before January, 1918, but lecturers or teachers of chemistry at an Australian university, technical college, or school of mines, or approved secondary school, chemists who are in charge of a Government laboratory, or have been in charge of a laboratory attached to a commercial or industrial establishment for three years, chemists or analysts who have been in practice for three years, and certain others will be eligible for membership without examination before that date. Chemists who have been absent from Australia on war service may be admitted without examination after January 1, 1918, at the discretion of the council. One of the stated duties of the council is to take any steps that may appear to be advisable to improve the rate of remuneration of chemists in private practice or in the employment of